The Newsletter of
Engineering Heritage Australia
The Institution of Engineers, Australia
No 14 - June 2003

Wrought Iron Bridges of Colonial NSW

Introduction

Metal bridges in the colonial period 1863-1893 of New South Wales were mostly of British origin and made from wrought iron. The principal types for major bridges were the plate web cellular girders, typified by the 1863 Menangle railway bridge and the1867 Nepean River bridge at Penrith, the 1867 road bridge of Warren trusses over the Murrumbidgee River at Gundagai, the railway lattice bridges 1872-1887 and the lattice road bridges 1874-1893. John Whitton was Engineer-in-Charge for the railway bridges, and W C Bennett and John A McDonald were mostly responsible for the road bridges.

John Whitton "Father of NSW railways" was Engineer-in-Chief 1856-1890. All the major wrought iron railway bridges were built during his tenure of office.

Cellular girders

The cellular girders had their origins in the famous tubular bridges by Robert Stephenson, the 1849 Conway Bridge, the 1850 Britannia Bridge and the 1860 St Lawrence River Bridge. Only the Conway Bridge survives. Their long spans, 460 ft (140 m) justified the tall tunnel-like construction based on the analytical work and model tests by Hodgkinson and Fairbairn, which showed that the cellular construction of the top and bottom flanges gave the bridges high resistance to torsional buckling failure which was prevalent in Europe.

The maximum span required in New South Wales for John Whitton's cellular bridges was only 198 ft (60 m) so a full-height tubular structure was not required, instead a half-through arrangement of side girders was adopted. These were massive with three plate webs sealed at the top and bottom to form pairs of cells or boxes. There was no overhead cross-bracing. The Menangle railway bridge was fully imported from Birkenhead, England, constructed by the famous British contractors Peto, Brassey & Co, was opened for traffic on 1 July 1863 and contains 1100 tons of wrought iron.

Wrought iron is close to pure iron and was the structural metal of the period but it was very expensive due to the tedious method of manufacture and the consequent low productivity. Molten cast iron was heated and stirred (puddled) in a furnace / oven to burn off as much of the impurities in the cast iron as possible. The result was a stongey mass that was beaten (wrought or worked) to exclude as much of the slag as possible and then formed into desired shapes, mostly bars and strips. These could then be forged-welded together to form larges items, structural shapes, ships' anchors and so on. Final shaping was greatly improved by the development of rolling mills which could also produce iron plates. The mass-production of cheaper steel, a carbon alloy of iron, came much later.

The 1863 Menangle railway bridge with its intermediate piers. The heavily riveted wrought plates are topped and bottomed by the cellular flanges but the arched ironwork is purely decorative. This bridge is under threat.

The Menangle Bridge was strengthened in 1907 with the addition of intermediate piers and the deck was strengthened in the 1920s with the addition of steel cross-girders. Part of the current problems appear to be fatigue cracks in the steel elements. The sister bridge at Penrith began as a shared bridge with a single track railway and a single lane road. When the adjacent double

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Canberra Engineering Hall of Fame

To commemorate the 75th anniversary of the founding of the Canberra Division of the Institution of Engineers Australia, the Division has established a Canberra Engineering Hall of Fame. Engineering has played an essential role in the development of Canberra, to produce the city that it is today. Much is heard and said about the planning of Canberra, but there is often little focus on the engineering that gave that planning substance. The intent of the Hall of Fame is to recognise the accomplishments of engineers in Canberra who have demonstrated outstanding professional achievement which has contributed significantly to the physical social and economic well-being of the national capital, as Canberra residents.

The inaugural inductees are a group of engineers past and present who have made remarkable contributions to the profession and to Canberra. Three of the six are living and one is still actively practising. They are Sir John Butters, Colonel Percy Owen, Alan Jones, Ross McIntyre, George Redmond and Professor Brian O'Keefe. Butters and Owen were recognized for their outstanding contribution to the early development of Canberra, enabling the transfer of Parliament from Melbourne, and for their establishment of the Canberra Division of IEAust in 1927. Jones was directly responsible for the development of electricity reticulation in Canberra, progressing from appointment as a Cadet Engineer in 1929 to Engineering Manager Electricity Supply and first Chairman of the ACT Electricity Authority, from which he retired in 1975. Redmond and McIntyre were recognized for their role in the remarkable expansion of Canberra from the late 1950s to the early 1980s when annual population growths were around 10%. Before moving to Darwin to further his career with the Department of Works, Redmond was Principal Engineer managing design and construction of Scrivener Dam, and a range of other concurrent projects including Bendora Dam, the Government Printing Works and Kings and Commonwealth Avenue Bridges. McIntyre continued this extraordinary development as Assistant Director Construction and Director of Works, providing infrastructure and buildings in expanding suburbs and town centres, and directing a long list of major projects including the Lower Molonglo Water Quality Control Centre, and the Australian Defence Force Academy. O'Keeffe has played a major role in the development of airways navigation aids for commercial aviation, as an electrical engineer in the Department of Civil Aviation from 1956 through to being First Assistant Secretary Airways Division and leaving Airservices Australia in 1987. As a co-developer of the Microwave Landing System and a major contributor to the International Civil Aviation Organization, particularly in Future Air Navigation Systems, he has been honoured in the UK and the USA for his contribution to civil aviation.

– Keith Baker

The Goulburn Waterworks

Plaqued as an Historic Engineering Landmark April 2003

The Appleby beam engine at Goulburn Waterworks

The Goulburn Waterworks contains one of the last working Beam Engines in Australia.

The Goulburn Waterworks, with its 1880s Appleby Beam Engine, was plaqued as an Historic Engineering Landmark during Heritage Week which was aptly themed "Freshwater, water, waves and wanderings". The Waterworks was the first water supply system for Goulburn, commissioned in 1886 and operated up to 1977.

Steve Finlay; President Sydney Division together with Goulburn City Mayor; Max Hadlow unveiled the plaque to commemorate this rare pumping station, which has one of the few remaining operational beam engines in Australia and the only one in its original location.

Guests included visitors from Albury, Wagga and Bathurst where sister pumping stations were built last century. Also in attendance were the 'Friends of the Waterworks', including Bruce Macdonald the original saviour of the site, who kindly had the plant steaming and operating.

The Heritage Committee would like to thank the efforts of Tim Geyer and his staff of the Goulburn City Council for making the day such a success.

For Waterworks museum bookings phone (02) 48234462 or (02) 48234448. On weekends phone the visitors centre on (02) 48234492.

For museum bookings by e-mail:
museums@goulburn.nsw.gov.au

– Glenn Rigden

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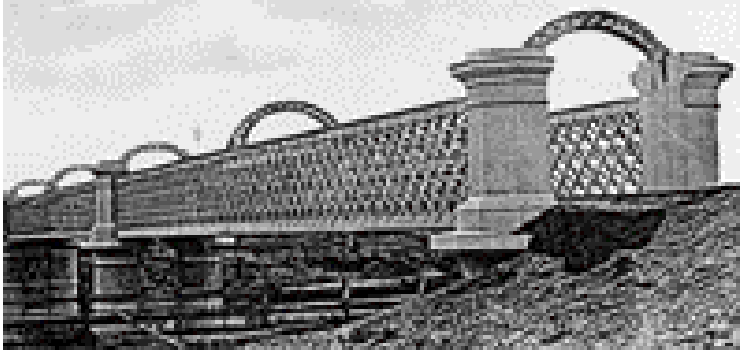
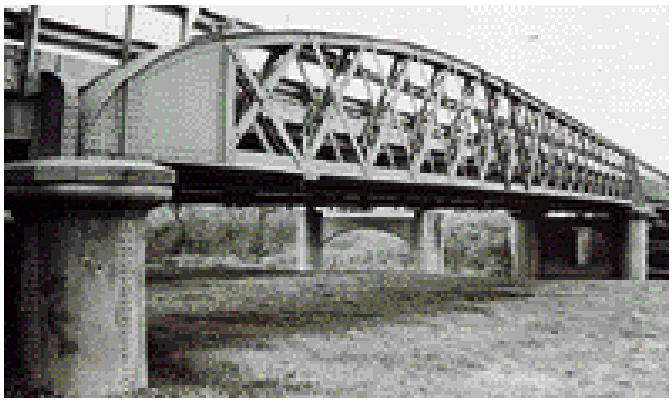
track railway trusses were completed in 1907, the old bridge became the double lane Great Western Highway. A concrete deck has replaced the original timber deck and with road loading much less than the designed rail loading, the bridge seems capable of an extended life well beyond its 136 years. In 1872 Maw and Dedge produced a paper extolling the structural virtues of this technically sophisticated 3-span continuous bridge.



The oldest iron railway lattice bridge is this 1876 3-span continuous structure over the Macquarie River, Bathurst. Sympathetic remedial works have occurred over the years including new steel overhead lateral bracing arches. It, too, is under threat.

Prince Alfred Bridge, Gundagai

Warren trusses, with their W-pattern of reverse sloping web members affording lower fabrications costs by repetition, have the problem of long sloping compression members, so this type of metal bridge has not been a popular choice. The durability of these trusses at Gundagai, helped by good maintenance, has proved exceptional. Whereas standard British construction used riveted joints, the Prince Alfred Bridge has pinned joints and its roller bearings support the top flanges rather than conventionally the bottom flanges. The subsequent dominance of the iron lattice bridges left the Prince Alfred Bridge the only one of its type.



Among the last of the iron lattice road bridges is the 1893 structure over the Hunter River at Aberdeen. Following the construction of a similar style duplicate bridge for northbound traffic, the old bridge was completely refurbished including a new concrete deck. Survival seems assured.

Lattice bridges

The high cost of the cellular bridges, including the 1869-1914 pair over the Wollondilly River near Goulburn, was a severe strain on colonial government finances and threatened Whitton's planned railway extensions. Unfortunately, the very nature of railways required more high-level bridges with long spans than for roads for which timber trusses proved to be adequate, so some form of major bridge was still required. The lightweight, lower cost lattice bridge filled the purpose and were equally suitable for major road bridges over deep gorges or wide rivers where otherwise a forest of short-span timber spans would have been required.

Both the railway and the road lattice bridges have two design styles, the first few were somewhat cumbersome in appearance with a busy lattice of up to 6 triangulations. The later series were refined to a more open appearance involving only 4 triangulations for the railway bridges and only 2 triangulations for the road bridges. All the railway lattice bridges and the early road bridges have conservative rectangular ends whereas the later road lattice bridges designed by John A McDonald have gently sloping curved ends.

Currently there are 11 surviving railway lattice bridges including the Como and Meadowbank bridges which have been converted to pedestrian / cycle way use. The lattice road bridges number 16.

Conclusion

All the colonial wrought iron bridges have had Heritage Assessments prepared by Cardno MBK for surveys commissioned by the RIC and RTA. These bridges are the most significant group of major bridges of the colonial era and have all been assessed as being of State Significance. Each agency is undertaking the preparation of Conservation Management Plans, and Comparative Studies where appropriate. Despite the topical "wrangle at Menangle" over structural safety issues which appear to threaten all old bridges with demolition, the reality of around $20 million for each replacement will show the merit of economical sympathetic strengthenings that will assure the retention of these high-heritage structures for many years to come.

– Don Fraser

The EHA Committee

Bruce Cole, from Tasmania Division, took over the chair of EHA at the beginning of 2003 for a two year term; Keith Baker from Canberra Division assumed the deputy chair position. Owen Peake was confirmed as the Northern Division representative.

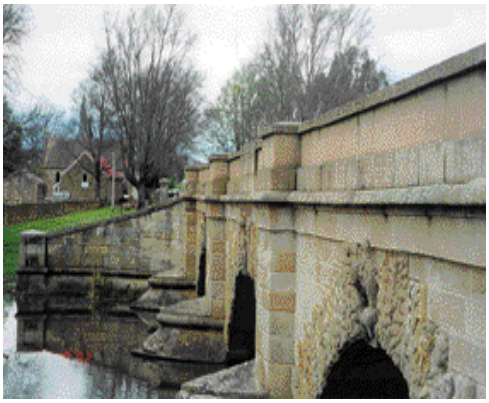
The end of 2002 saw the retirement from the committee of its longest serving member, Harry Trueman. As well as being a past chairman, Harry has been (and will continue to be from outside the formal committee) our most knowledgeable member in basic conservation philosophy and principles. He was responsible for the 1992 publication *Engineering Heritage and Conservation Guidelines* and is continuing with writing the new edition. He is presently the EHA webmaster and continues to develop the site.

We wish Harry well in his retirement and thank him for his past efforts and encouragement.

HEM for Ross Bridge, Tasmania

This beautiful sandstone bridge was awarded an Historic Engineering Marker at a ceremony on 1st March 2003. It is the third oldest masonry arch bridge in Australia, and it remains in service without load restriction.

Built in 1836, the bridge carried all the traffic between Hobart and Launceston across the Macquarie River at Ross for 140 years, until the Midland Highway bypassed the town some decades ago. Nowadays it carries local traffic and tourist coaches from the highway to the historic township whose many sandstone buildings reflect its colonial heritage.



The unique carvings of Ross Bridge, Tasmania

The original bridge built in 1822 consisted of drystone piers supporting logs covered with a layer of road metal. When this structure had fallen into disrepair and partly collapsed, the civil engineer and colonial architect John Lee Archer suggested in 1831 that a new arch bridge be built using local sandstone. Originally this new bridge was designed in five spans adjacent to the original bridge. However, at the suggestion of the Inspector of Roads, Roderick O'Connor, another site 300 yards downstream was chosen where a better foundation existed and only three spans were required.

As each arch is a segment of a circle, the bridge is known as a segmental arch bridge. John Lee Archer had a full appreciation of the classical rules of aesthetics. For example, the ratios of pier width to span and span width to height are whole numbers, and the structure is unified by the strong horizontal ledge below the parapet. Each pier has a sharp cutwater to direct the river flow under the arches. Individual parapet blocks are meticulously tied together with wrought iron clamps, carefully caulked with lead.

Until better supervision was exercised, the sandstone blocks prepared and stockpiled for the bridge tended to disappear, as other buildings were erected in the town. The foremost tradesmen available for the stonework were two convicts, James Colbeck and Daniel Herbert. These stonemasons, together with a convict workforce under the superintendence of Captain William Turner, the Commandant of Ross, started work in June 1835. The bridge was completed in June 1836 and opened by Lt Governor Arthur on 21st October 1836. Colbeck and Herbert earned their emancipation for their work on the bridge.

The stonemasons gave the bridge a unique feature. Every tapered arch block has an intricately carved surface. This feature appears to be unique in the world. After a century and a half of exposure to the elements, these carvings are losing some definition, and their long-term preservation is a serious philosophical and technical challenge.

Several descendants of John Lee Archer attended the ceremony held in the Ross Town Hall on 1st March 2003. Over ninety local residents, councillors and Institution members attended, together with representatives of the Tasmanian Heritage Council, National Trust and the Department of Infrastructure, Energy & Resources which owns the bridge. Dick van der Molen described the features of the bridge and character of the people who built it. National President Peter Greenwood awarded the plaque that was unveiled by His Excellency the Governor, Sir Guy Green, and accepted by the Minister for Infrastructure Jim Cox. Mayor Kim Polley spoke on behalf of the Northern Midlands Council and Ross residents. Councillor Tru Dowling led a team of volunteer ladies who decorated the hall and provided a delicious afternoon tea.

– Bruce Cole

HEM for Victoria Bridge, Picton

The Sydney Division Engineering Heritage Committee, together with the RTA, plaqued the old timber truss Victoria Bridge at Picton during the National Trust's Heritage Week in April 2003. The Victoria Bridge is the highest timber bridge over water in the state of NSW and is still one of Picton's operational historic bridges. The RTA will soon perform major maintenance on the bridge as part of their Timber Bridge Management Policy to maintain state heritage bridges.

Victoria Bridge, Picton. What is more appropriate in a country setting than the building on the right?

The Historic Engineering Marker was unveiled at Picton station, adjacent to the bridge, by the IEAust Sydney Division President, Steve Finlay together with the Mayor for Picton, Councillor Col Mitchell and Mal Bilaniwsky, Asset Manager, Southern Region RTA.

The RTA followed on for the day with a vintage car rally to Mittagong where they launched their Southern Highlands Self Guide Heritage Tour Booklet that will be obtainable from RTA offices.

Also on show during the morning was the steam locomotive 2705 from the Railway Museum at Thirlmere.

The Heritage Committee would like to thank Ken McNally and his staff of the RTA for their effort and for making the day so enjoyable.

– Glenn Rigden

National Cultural Heritage Forum

The National Cultural Heritage Forum has been in existence for some years and Engineering Heritage Australia has been represented throughout most of its life. Keith Baker reports on the two most recent meetings.

Dr David Kemp, Federal Minister for Environment and Heritage met with peak non-government heritage organisations at Parliament House on 7 August 2002, and again on 2 June 2003, continuing the procedure established with the previous Minister. Engineering Heritage Australia participated in the forum, through Deputy Chair Keith Baker from the Canberra Division. The meetings were chaired by Prof Bill Logan and Prof Sharon Sullivan of Australia ICOMOS, and a wide spectrum of organisations contributed, representing heritage interests in indigenous culture, history, humanities, archaeology, architecture, museums, marine archaeology and engineering, as well as the Australian Council of National Trusts, the National Environmental Consultative Forum and the Chairs of Heritage Councils. The Minister was supported by the Secretary of his Department, the Chair of the Australian Heritage Commission, the First Assistant Secretary Heritage, and officials from Environment and Arts departments.

Participants were able to report to the Minister on the activities of their organisations and raise particular issues of concern. Engineering Heritage Australia drew attention to our plaquing and oral history programs, the problems with conserving engineering heritage and documents, and the current issue of conflicting natural and cultural values concerning some historic weirs.

The Minister discussed the new heritage legislation before the Senate, his hope that it would soon be passed without further delay, and the importance of heritage for the Government as an essential part of our national identity. He spoke enthusiastically about the Distinctly Australian program that was announced in the Budget, the need to engage the general community, and the focus that would be created by the Year of the Built Environment in 2004. He also expressed gratitude to the organisations present for their assistance in developing and supporting the new heritage bills.

The Forum discussed a range of issues with the Minister, including the long-standing issue of disposal of Commonwealth property and means of protection. Dr Kemp took on board suggestions for implementation provided by the Forum. He was also supportive of Forum member participation in the taskforces of the Environment Protection and Heritage Council. A comprehensive vision statement was tabled by the Forum members, with a plea for more Commonwealth leadership and greater support for voluntary organisations working with cultural heritage so that they could share the support provided for the natural environment.

The composition and frequency of meeting of the Forum was considered and it was agreed that more collaborative work would be undertaken and detailed briefing would be provided with the next budget.

– Keith Baker

Awards for Engineering Heritage

Engineering Heritage Australia has established two awards for engineering heritage.

The major award will be the John Monash Medal, to be awarded annually to a person who has made an outstanding contribution to the cause of engineering heritage over a considerable time.

(The John Monash Medal was originally awarded for the best paper on engineering related to General Engineering interests. However, since the demise of the General Engineering College, the Medal has not been presented. Accordingly, with the approval of the Institution's Council it has been re-designated as the award for engineering heritage. Monash was, of course, not only an eminent Australian, military commander and engineer, but much of his work is today a significant part of our engineering history and heritage).

National Vice-President Peter Cockbain, on the left, presents the inaugural Award of Merit for Engineering Heritage to Rob Breen for his outstanding service over many years to the National Panel (later Committee) for Engineering Heritage

The Award of Merit for Engineering Heritage will recognise and show appreciation to members of the Institution's heritage groups who have made significant contributions and have given outstanding voluntary service, often over many years.

As most reading this newsletter will appreciate, the conservation of our engineering heritage depends on the efforts of dedicated individuals and organisations, counterbalancing the forces of development, modernisation, economics and renewal. To them we owe an enormous debt as, without their work, the contribution of engineers and engineering would largely go unrecognised, much would disappear, and Australia's perceived heritage would mainly consist of buildings and the works of others.

Until now these people have largely gone unrecognised and unappreciated. However, this will change with the advent of the Engineering Heritage Awards.

Nominations for the awards will soon be advertised. Meanwhile, enquiries about the awards might be made through Benita Honig, the Administrator of *Engineering Heritage Australia* at (02) 6270 6525 or bhonig@ieaust.org.au .

– Michael Clarke

Heritage Dams and Weirs Under Threat

A movement has begun to demolish dams and weirs that are perceived to have caused ecological degradation and environmental damage. At present, effort seems to be focussed on NSW and Queensland, but it could spread more widely.

Whilst organizations like the Inland Rivers Network are motivated by ecological concerns, State water authorities seem anxious to use the movement to eliminate the cost of caring for redundant structures and the legal liability in the event of their failure or other accident e.g., dam break or injury. One of the arguments being used is safety.

Already the 1899 Wellington Dam has been demolished. Wellington was one of 13 cylindrical arch dams constructed by the NSW Public Works Department between 1896 and 1908. They have a significant place in the development of arch dam technology and created international interest. One of them, Medlow Bath Dam, was awarded an Historic Engineering Marker in 1994. Even though laid down heritage assessment procedures were not followed in the case of Wellington, the NSW Heritage Office was unable to exercise sufficient leverage to ensure that alternatives to demolition were adequately explored.

Medlow Dam, D/S face 1996.

There is no doubt that the construction of weirs and dams around Australia has had a major impact on the environment and riverine ecology. The potential for this was not understood when some of the structures were built (up to 100 years ago) and after it was understood, engineers and politicians either ignored the problem or continued with construction, feeling that the benefits outweighed the disadvantages.

The dams and weirs served a particular purpose and in most cases generated benefits – town water supplies, irrigation, stock water, navigation, mining activities etc.

Times have changed, and whilst many of the structures are still in use, some are now redundant, some have silted up and the dis-benefits of some have become apparent. These and other factors, including a need to redress environmental and ecological degradation, have led to demands for the removal of not only those structures seen to have no further use and those demonstrably having adverse impact, but by some, for the removal of as many dams and weirs as possible.

Whilst there may be valid reasons for the removal of some of these structures, many have played an important part in the development of the nation and some are a significant part of our cultural heritage. Some have also created a local environment which may of itself be valued and confer benefits to local communities.

Engineering Heritage Australia believes that the future of each structure should be determined following an appropriate evaluation of all relevant factors. These include its impact on the native environment, the worth of the environment in which it now exists, heritage value and other relevant factors such as condition and hazard in the event of failure. If it is determined that the dis-benefits outweigh the benefits and some remediation should occur, a full range of options should be explored to solve the perceived problem. This must take into account the desirability of conserving the heritage values of the structure. Quite obviously in respect of some structures, options other than removal will be available to mitigate their adverse impacts.

The issue should not be seen as a conflict between the environment and heritage, but as a problem to be resolved through balanced decision-making, after honestly weighing up all the relevant factors.

– Michael Clarke

Association for Preservation Technology International

The APT is a cross-disciplinary organization dedicated to promoting technology for conserving historic structures and their settings. It is based in North America and has a small Australian membership. Of interest to engineers is its concentration on the technology of conservation, speaking in language which engineers understand, applying science and scientific method to solving practical problems, just as engineers do.

If you wish to solve a typical conservation problem using a systematic approach, rather than relying on dubious claims for the latest magic coating, it is likely that the APT has already published on the matter. It is highly recommended to all conservation engineers.

In the interests of starting a dialogue, this issue of the EHA newsletter is being sent to all Australian APT members. Others can find more information from the APT website, www.apti.org.

– the editor

NEL for Barossa Dam

On Sunday 20th October 2002 Prof Andrew Downing, National Vice President Institution of Engineers Australia unveiled a National Engineering Landmark for the Barossa Dam near Williamstown , South Australia, also known as "The Whispering Wall". Alexander Moncrieff, grandson of A B Moncrieff designer of the dam, assisted with the unveiling.

The event was organised by Engineering Heritage SA, SA Water and the Williamstown Tourism Group. CEO of SA Water, Ms Anne Howe, opened the proceedings and Prof Downing provided an overview of the plaquing program and the significance of Barossa Dam.

Barossa Dam celebrates 100 years and is awarded a NEL

The plaquing ceremony coincided with the centenary year of the reservoir construction completion and marked the beginning of National Water Week 2002. SA Water celebrations included the opening of a new visitor information bay by the Minister for Government Enterprises, The Hon Pat Conlon. ANCOLD (Australian National Conference on Large Dams) members attended the ceremony as part of the their national pre-conference tour.

The Barossa Dam is a concrete arch 36 m high and 144 m along the crest. The volume of the wall is approximately 14,000 m^3 of which 12% is large rocks termed "plums" to economise on the quantity of concrete used. Dam construction commenced in June 1899 with the first water being supplied to the township of Gawler and surrounding districts on 31 December 1901. The resident engineer reported "topping of the main wall was completed on 25 September 1902" All works were completed in March 1903 with the dam filling for the first time in September 1903.,

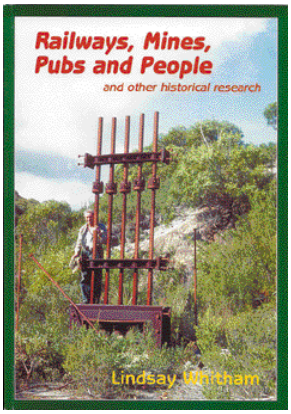
The Barossa Dam was designed by Engineer in Chief AB Moncrieff CMG MICE and OH Rogers AMICE was Resident Engineer. It was among the first true arch dams of concrete construction built in the world. At the time of construction it was the largest arch dam built in Australia , being almost double the height and three times the shell volume of existing large dams. The methods employed in the concrete mix design, the automatic batch weighing of concrete ingredients and concrete quality control during construction were unique at the time. The dam demonstrated that construction of slender arch walls of large size was both feasible and cost effective and aroused interest in the engineering world, including the UK and USA. The Barossa Dam became a landmark in dam construction in both Australia and internationally. After 100 years of service the dam wall remains in excellent condition and is evidence of the success of a bold design and the quality of its construction.

Following the ceremony, a guided tour of the facilities enabled a view of the model dam built on the downstream side of the dam wall which was used to check the design.

– Nigel Ridgway

Book Review

"Railways, Mines, Pubs and People and other historical research"



Lindsay Whitham is a Tasmanian engineer who has spent the time since his retirement researching and writing papers on Tasmanian history. This fascinating collection covers topics as diverse as historic roads and railways, coal mines and their transport systems and whether the small town of Zeehan on the West Coast really did have 26 pubs. It is well illustrated and finishes with some very readable biographies; it has a comprehensive bibliography and references.

The book is recommended to anyone who is interested in the history of engineering in Tasmania or anywhere else. It is available from the Tasmanian Historical Research Association, PO Box 441, Sandy Bay, TAS 7006 for $20 plus $5 packing and postage.

– the Editor

Winner - 2002 Sydney Division Engineering Excellence Awards

The Walsh Bay Pier 8/9 Refurbishment project, submitted by Robert Bird & Partners, Multiplex Constructions and Waterway Constructions, was the winner in the Heritage category at the 2002 Sydney Division Engineering Excellence Awards

Butters Oration

The Sir John Butters Oration was established by the Canberra Division of the Institution of Engineers, Australia in 1985 to publicise engineering and the work of engineers associated with the Australian Capital Territory. The Oration is named in recognition of the significant role that Sir John Henry Butters played in the establishment of the Canberra Division of the Institution, that of founding father and interim Chairman. Sir John Butters was Chief Commissioner of the Federal Capital Commission from 1924 to 1929 and National President of IEAust in 1927/28.

On 4 September 2002, 75 years after the formation of the Canberra Division, as well as the 75th anniversary year of the opening of the Provisional Parliament House, the Canberra Division had great pleasure in relaunching the Sir John Butters Oration. Mr Paul Perkins, Chief Executive of ACTEW Corporation and Chairman, Australian Science Festival Ltd, presented the 2002 Sir John Butters Oration entitled "Professionalism and Nation Building" at Old Parliament House, Canberra. Referring to his topic, Perkins stated that "Sir John Butters and the engineering profession both deserve a full chapter on each count. Acting professionally and building a nation defy simple definition. They involve many things, but ultimately they are both about having high standards to live and work by, and handing those standards on to following generations. Sir John Butters set such standards in his life, his work, and his legacy."

After speaking of Butters' monumental work in Tasmania developing hydro electricity and in Canberra building the capital, Perkins went on to say that "Butters life work demonstrates that nation building is more than the construction of buildings, power stations, communications and transport infrastructure. It is equally about establishing new cultural and social standards and traditions which must be renewed and reaffirmed by succeeding generations. …Under enormous pressure to get a big job done, he did not revert to old fashioned, adversarial bureaucratic thinking, he supported in-kind employee initiatives and used innovation to get people to work together. He worked with teams to draw creative energies and bureaucratic instincts together to achieve goals for which all involved could claim ownership. …There is a need for similar leadership today. Convergence is the essence of sustainable development. Since 1988 Canberra has experienced a period of growth and transformation like that experienced in Butters' time. Real and sustainable progress has been made. The progress to come must be towards real sustainability of our city, our region, and our nation. The challenge for the Institution and individual engineers is to use the example of Butters, as epitomised in his Tasmanian and Canberra periods, to provide leadership in the nation building in accord with triple bottom line principles, a new concept Butters intuitively embraced from first principles".

Sir John's son, John W Butters was present and spoke briefly in response of the family's time in Canberra and the influence of his father.

– Keith Baker

Twelfth National Conference on Engineering Heritage

Toowoomba Queensland
29 September to 1 October 2003

"Engineering Heritage Matters!" is the theme of this year's conference in Toowoomba, home of the iconic Southern Cross windmill. Preceded by a pre-conference tour which includes a tilt-train trip to Maryborough, the conference includes a vast range of technical and general interest papers, from the depths of wells, sewers and tunnels to the heights of chimneys; from football grounds to cars and road trains and with politics, policy and soul searching, there will be something for everyone.

Conference brochures are available from:

Conference Secretariat, The University of Southern Queensland, PO Box 282, Darling Heights QLD 2190, Phone: +61 7 4631 2190, Fax: +61 7 4635 5550, Email: stewartc@usq.edu.au

Engineering Heritage Web Page

Sydney Division

The Sydney Division Engineering Heritage Committee recently launched its web site at :

http://www.sydney.ieaust.org.au/heritage/heritage_index.htm

The web site contains a variety of material from information on engineering heritage works, news events, publications and a variety of tours for those interested in the topic.

The web site has started with a great deal of content mainly relating to Sydney and NSW and hopes to expand to cover many topics dealing with engineering heritage and industrial archaeology in Australia.

GO HAVE A SURF and see our web site.

– Glenn Rigden

This newsletter is published by Engineering Heritage Australia, a Special Interest Group of the Institution of Engineers, Australia.
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